

Remarks/Arguments

Favorable consideration of this application in light of the following discussion is respectfully requested.

Claims 3, 4, 11 and 18-24 are pending in the application, with Claims 3 and 11 amended and Claims 18-24 added by the present amendment.

In the outstanding Office Action, Claims 3-4 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee et al. (U.S. Patent No. 6,288,493, hereinafter Lee) in view of Holland et al. (U.S. Patent No. 5,800,619, hereinafter Holland) and Kazumi et al. (U.S. Patent No. 6,180,019, hereinafter Kazumi) or Tobin et al. (U.S. Patent No. 5,619,103, hereinafter Tobin); and Claims 3-4 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Lee in view of Hemker et al. (U.S. Publication No. 2004/0011467, hereinafter Hemker) and Kazumi or Tobin.

Applicants request acknowledgement of the IDS filed on April 28, 2004.

Claims 3 and 11 are amended to recite that the another coil is a two turn coil. Support for this amendment is found in Applicants' originally filed specification.¹ New Claims 18 and 20 recite that the at least two coils have a first radial tightness and the another coil has a second radial tightness different from the first radial tightness. New Claims 19 and 22 recite that the another coil has a diameter different from a total diameter of the at least two coils. Support for new Claims 18, 19, 20 and 22 is found in Applicants' originally filed specification.² New Claims 20 and 23 recite that the at least two coils comprises a third coil, the third coil being a two-turn coil. Support for new Claims 20 and 23 is found in Applicants' originally filed specification.³ New Claim 24 corresponds to original Claim 4. No new matter is added.

Briefly recapitulating, Claim 3 is directed to a power supply antenna which includes at

¹ Figure 3; specification, page 15, line 26 – page 16, line 1.

² Figure 8; specification, page 25, line 24 – page 28, line 13.

least two coils disposed concentrically on a common plane; and another coil disposed on a plane parallel to the common plane. The another coil is a two turn coil. The at least two coils comprise a plurality of conductors bent into a form of an arc, and power supply portions formed at opposite ends of the respective coils so as to be connected to a high frequency power source. The power supply portions are located in different phases on the common plane. By placing another coil in a plane parallel to the common plane that contains the at least two coils located in the common plane, heating distribution of the plasma can be shaped to achieve a uniform absorption distribution and/or intensification.⁴

Lee discloses an antenna device with three coaxial coil antennas disposed in a common plane.⁵ However, as noted in the Official Action, Lee does not disclose or suggest a third coil disposed on a plane parallel to at least two coaxial coils on a common plane, as recited in Applicants' Claims 3 and 11. Lee also does not disclose or suggest Applicants' claimed adjustable radii.

Holland discloses an "electric source [including a] substantially planar coil 24, usually mounted immediately above window 19"⁶ and alternative embodiments that include "positioning the coils... in many different planes above window 19."⁷ However, contrary to the Official Action, Holland does not disclose that a coil disposed on a plane that is parallel to a plane that contains two or more other coils as recited in Applicants' Claims 3 and 11. Holland explicitly describes that the outer and inner portions of the coils are at different heights about the window 19.⁸ Therefore Applicants submit that Holland teaches away from Applicants' recited parallel planes. Furthermore, Holland does not describe is that the third coil is a two turn coil as recited in amended Claims 3 and 11.

³ Figure 3; specification, page 15, line 26 – page 16, line 1.

⁴ Specification, page 26, lines 13-20.

⁵ Lee, Figure 5.

⁶ Holland, column 7, lines 2-8.

Tobin describes a plasma lighting device that includes either planar coils or parallel conductors. However, contrary to the Official Action, Tobin does not disclose or suggest coils having an adjustable radii. In describing the use of parallel conductors, Tobin notes “[a] further advantage of the parallel conductor method over the planar coil is that the field profile can be varied by moving the relative position of the conductors.”⁹ Thus, not only does Tobin fail to cure the deficiencies of Lee and Holland, with this statement, Tobin explicitly teaches away from the coil/arc devices of Lee and Holland and as recited in Applicants’ claims. Furthermore, Tobin does not disclose or suggest a plurality of coils in parallel planes, let alone a third coil that is a two turn coil as recited in amended Claims 3 and 11.

Kazumi describes a plasma generator where the plasma field is adjusted through vertical displacement of a single coil or mechanical adjustment of the radius of the coil.¹⁰ However, Kazumi does not disclose or suggest a plurality of coils in parallel planes, let alone a third coil that is two turn coil as recited in amended Claims 3 and 11.

Applicants therefore submit that neither Lee, Holland, Tobin nor Kazumi disclose or suggest all the elements recited in Applicants’ claimed inventions. Thus, Applicants request the rejection of Claims 3 and 11, and all claims depending therefrom, in view of Lee, Holland, Tobin and Kazumi be withdrawn.

Hemker discloses an RF antenna having a cylindrical plasma chamber 106 which is a 3-D, stacked configuration employed to promote azimuthally symmetric coupling.¹¹ Inductances between the coils are adjusted by varying the DC current to the electromagnetic coils 104.¹² However, like Lee, Holland, Tobin and Kazumi, Hemker fails to disclose or suggest an upper coil that is a two turn coil as recited in amended Claims 3 and 11.

⁷ Holland, column 14, lines 10-12.

⁸ Holland, column 14, lines 12-24.

⁹ Tobin, column 8, lines 35-37; Figures 11a-f.

¹⁰ Kazumi, column 11, line 46 – column 12, line 24; Figures 16 and 23a-b.

Because none of the cited prior art, individually or in combination, disclose or suggest all the elements of independent Claims 3 and 11, Applicants submit the inventions defined by Claims 3 and 11, and all claims depending therefrom, are not rendered obvious by the asserted prior art for at least the reasons stated above.¹³

Accordingly, in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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¹¹ Hemker, paragraph [0051]; [0058]; Figure 1.

¹² Hemker, paragraph [0054].

¹³ MPEP § 2142 "...the prior art reference (or references when combined) must disclose or suggest **all** the claim limitations. The disclosing or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."